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ABSTRACT

The use of technology in the classroom and in support of educational administration are essential to the achievement of excellence by Oregon schools in the 21st Century. This document is the outcome of a study conducted by the Oregon Department of Education to evaluate the current information and communication needs within the Department. The report is based on group interviews and surveys with more than 150 staff from the Department, local school districts, education services districts, community colleges, educational organizations, and other state agencies. Sections 1, 2, and 3 contain, respectively, an executive summary, a definition of assignment, and an assessment of the current situation. Section 4 discusses findings, current practices, problems and solutions, benefits, priorities, and objectives. Recommendations and an implementation plan are presented in sections 5 and 6; highlights include data standards, compatibility, hardware and software, electronic communication, information access, leadership, technical support and training, and funding. Section 7 discusses an analysis and conclusions. Appendices contain information on the technology study participants, training matrix, individual needs assessment, and questionnaire summaries. (AEF)

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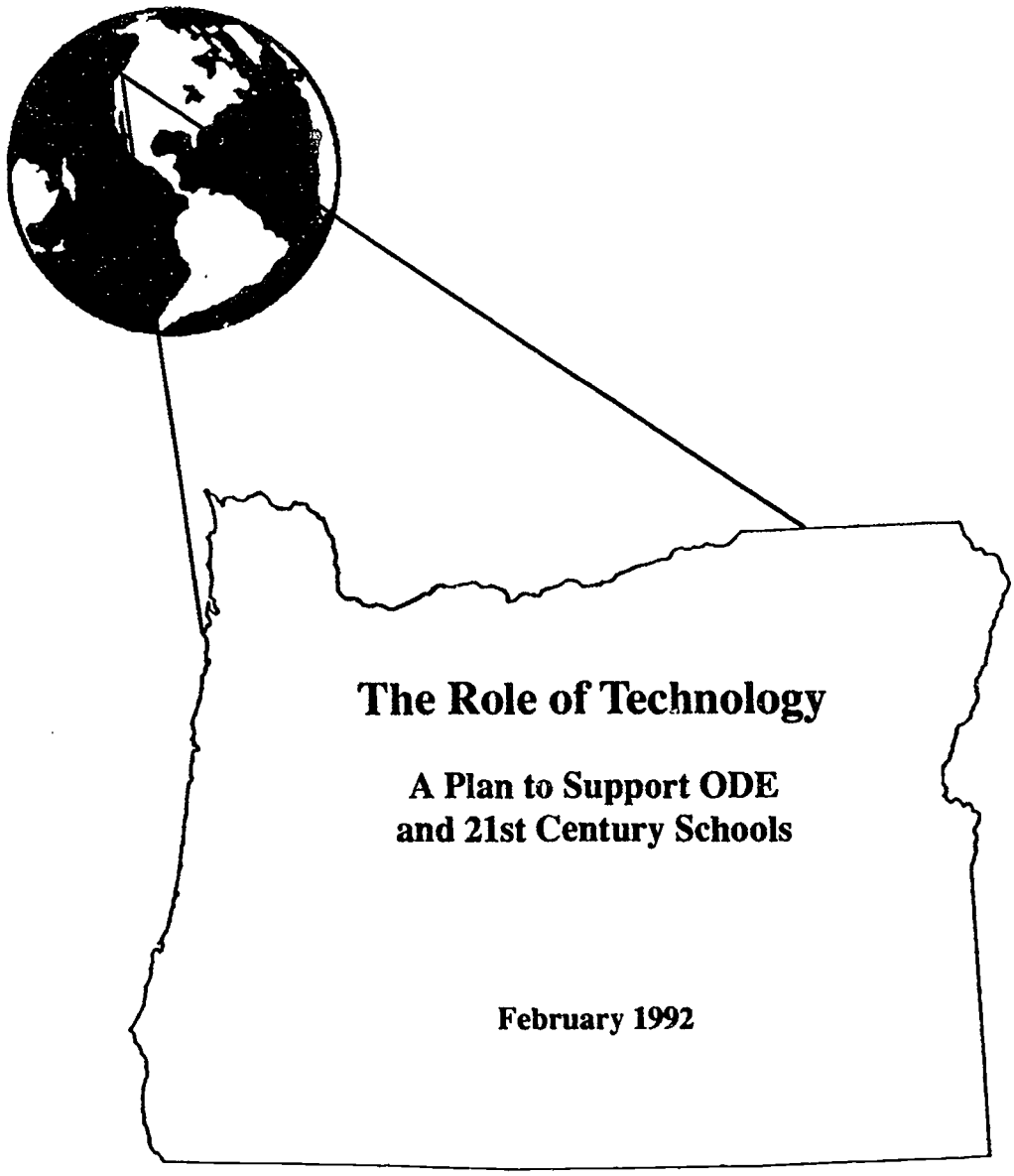

The Role of Technology

A Plan to Support ODE and 21st Century Schools

February 1992

Norma Paulus
State Superintendent
of Public Instruction

Oregon Department of Education
700 Pringle Parkway SE
Salem, Oregon 97310-0290

The Role of Technology

A Plan to Support ODE and 21st Century Schools

February 1992

Tom Cook, Chairman
Technology Requirements Study Committee

Oregon Department of Education
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FOREWORD

Technology in the classroom and technology in support of educational administration are essential to the achievement of excellence by Oregon schools in the 21st Century.

It is the Oregon Department of Education's role to provide leadership in promoting the use of technology. The first step is to provide the Department with a level of technology which allows the most efficient use of our staff. We have an equal responsibility to local districts to provide leadership in developing an efficient system of data collection, one that eliminates duplication of effort and involves development of a statewide communication network.

Planning and implementation are critical. The Department of Education, in partnership with IBM, has undertaken a comprehensive study of the current information and communication needs within the Department, in districts and statewide. This report is the outcome of that study.

The cooperation of the numerous people who contributed to this study and report is greatly appreciated. More than 150 people from the Department of Education, local school districts, education service districts, community colleges, educational organizations and other state agencies participated in interviews or provided data to the study committee.

I especially want to thank the members of the Information Technology Requirements Study Committee and their organizations for the time they spent between August 1991 and January 1992 preparing this blueprint for meeting Oregon's education technology needs. Members of the committee were:

Department of Education staff:

Tom Cook, Chairman
Keith Brown
Walter Koscher
Terry Nicholson
Jim Sanner
Kim Wellington
Bob Williams

Ed Dodson, Salem/Keizer School District
Steve Hill, IBM, Salem
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Norma Paulus
State Superintendent
of Public Instruction

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TECHNOLOGY REPORT EXECUTIVE SUMMARY

The use of technology in the classroom and in support of educational administration are essential to the achievement of excellence by Oregon schools in the 21st Century. Providing leadership in promoting the use of technology is the Oregon Department of Education's role.

The use of technology and computerized information has been a Department focus for more than 20 years. The basis for most of the Department's activities and efforts were set in 1969 by a Business Task Force on Education which evaluated the business and management functions of elementary and secondary education in Oregon.

The task force, however, could not anticipate the rapid pace at which technology has changed since 1969. As a result, the Department finds itself in a position of reacting to change instead of planning for it.

To put the Department in a leadership role, State Superintendent of Public Instruction Norma Paulus commissioned a review of today's environment and preparation of a technology plan to address current and future needs.

The result of this review is a commitment by the Department of Education to develop an efficient system of data collection, one that eliminates duplication and develops a statewide communication network.

Recommendations for achieving this goal are included in this report "The Role of Technology: A Plan to Support ODE and 21st Century Schools." The report, the result of a six-month study which included interviews with Department and district personnel, recommends establishing:

- Data collection and reporting standards;
- Standards for acquisition, distribution and maintenance of compatible technology within the Department;
- Equitable distribution of technology and a plan for replacement and upgrade of that technology;
- A statewide electronic communications network accessible to all ODE and local district staff.

The report recommends ODE:

- Develop an information management system which integrates and maintains all collected data;
- Provide leadership in developing and implementing a long-range technology plan to support hardware, software, communication and appropriate staff training.

The report calls for funding recommendations through a combination of redirecting existing resources, accessing grants and developing business partnerships.

Report sections include:

- THE ASSIGNMENT —This section includes the charge to the study committee to assess the need for information currently being collected; determine the feasibility of a statewide telecommunication system; define training requirements; review current information systems and requirements; develop standards and guidelines for technology use.

- THE CURRENT SITUATION section provides documentation for issues which need attention. Research for this section shows there is a lack of uniform data standards; generally incompatible hardware and software; little electronic communication; unreliable and inaccessible information; continual funding challenges.

- PROBLEMS are prioritized and defined. The top three problems are lack of technology, duplicate and excessive information requests, lack of data collection and processing standards.

- SOLUTIONS to problems were also prioritized. Solutions focus on establishing a statewide communications system and generally accepted standards for data collection, hardware and software. Training is also a priority.

- The RECOMMENDATIONS section details the study committee's recommendations for data collection and reporting standards, technology standards, the replacement and upgraded plan, the statewide electronic communication system, the ODE management information system, leadership, training and staff support for the plan, the plan for funding to support the recommendations.

- The IMPLEMENTATION plan can be accomplished in four years. The plan shows how and when each recommendation can be accomplished. The major emphasis is on using existing Department and school district resources.

  The report recommends achieving funding for the plan through a combination of redirected resources, grants, collaborative efforts with business, future budget requests.

- The BENEFITS of implementing this technology plan are most evident in efficiency, productivity, improved accuracy, accessible information and the reduction of duplication.

However, the primary benefits are to students. "Technology helps leverage potential. Students using and growing up with technology will be more employable," according to Bob Burns, ODE deputy superintendent.

"Technology can mean the difference between a career or living in a group home for some kids," says Bill Cruscial, Oregon School for the Deaf teacher.

This report agrees and presents a "living plan." The plan, reviewed and updated annually with assistance from the education community, will assist the Department of Education in helping Oregon schools achieve excellence in education with the support of appropriate technologies.

DEFINITION OF ASSIGNMENT

The State Superintendent of Public Instruction and Executive Cabinet of the Oregon Department of Education (ODE), defined the project scope and study perspectives. Objectives were identified which have since guided the study and development of this report. The Superintendent appointed a study committee made up of representatives from the Department, LEAs and educational organizations and challenged them to meet the following objectives.

- REVIEW THE NEED FOR ALL INFORMATION CURRENTLY BEING COLLECTED
- REVIEW THE FEASIBILITY OF A STATEWIDE ELECTRONIC COMMUNICATION SYSTEM
- DEVELOP PLANS TO PROVIDE ONGOING TRAINING FOR THE DEPARTMENT AND LOCAL DISTRICT STAFF
- ESTABLISH AN ACCESSIBLE, USER-FRIENDLY, DEPARTMENT-WIDE INFORMATION SYSTEM UTILIZING COMPATIBLE HARDWARE AND SOFTWARE
- DEVELOP AND IMPLEMENT TECHNOLOGY GUIDELINES AND STANDARDS FOR COMMUNICATIONS, DATA COLLECTION AND INFORMATION SYSTEMS

The report is based on interviews and surveys with more than 150 staff from the Department, local school districts, education services districts, community colleges, educational organizations and other state agencies. Each person had an opportunity to respond to six questions. Since the interviews were conducted in groups instead of individually, one person's response often generated additional comment from other interviewees. This process provided a picture of the various perspectives and needs.

CURRENT SITUATION

Categories to guide the study

The committee, after many hours of input by users throughout the state, formed the following categories:

Data Standards
Compatibility
Hardware/Software
Electronic Communication
Information Access
Leadership
Technical Support and Training
Funding.

Each of these items is addressed later in this report, as well as recommendations and a cohesive plan.

Each category is introduced in this chapter by a summary statement which presents the current findings, followed by highlighted descriptions. In many cases, the ideas were stated by several participants and reflect their own circumstances.

DATA STANDARDS

Coordination and standards in data collection and reporting at the Department do not exist because:

- Technology activities within the ODE are fragmented.
- Reporting deadlines are not coordinated. They overlap and are too short.
- Too many forms. Too many reports. This excessive duplication impedes productivity for both ODE and LEAs.
- Lack of data definitions resulting in inconsistent and inaccurate information which negatively impacts decision-making.
- No designation has been made for responsibility of, or authority for, standardizing data collection and reporting.

COMPATIBILITY

Incompatible hardware and software, within ODE, have resulted in:

- Difficult and expensive training.
- Difficulty implementing an agency network.
- Difficulty sharing files electronically.
- Multiple devices at individual work locations.
- The preclusion of Department-wide electronic mail.
- Increased user frustration.
- Restricted staff skill, mobility, and productivity because of the inordinate training required to use various work stations.
- The inability to provide agency-wide technological support.

HARDWARE/ SOFTWARE

Technology resources are not distributed equitably within the Department:

- Equipment/software are inadequate.
- Access to technology is not equal for all staff.
- Down time is costly in personnel productivity.
- It is expensive to maintain outdated technology.

ELECTRONIC COMMUNICATION

Total networking within the ODE and among schools and other agencies is inhibited because:

- Current ODE central processor is at maximum capacity.
- Outdated technology is expensive to support and complicates connectivity.
- There is a variety of incompatible technologies.
- There is a lack of technical support staff.
- There is no statewide education technology plan.
- Small or remote districts have special communication needs problems and limited staff to comply with ODE requests.

INFORMATION ACCESS

Current and reliable information is difficult to locate, access and maintain.

- Islands of information have been created by the development of stand-alone information systems.
- Duplication of information exists Department-wide.
- Information systems reside on different hardware and software.
- Staff members lack knowledge of what data exists and where it is located.
- Lack of reliable data results in inconsistent and inaccurate information negatively impacting the decision-making process.
- Timely access to information is inhibited because of lack of knowledge of where data is located and inability to convert from one system to another.
- Consistent application of confidentiality rules is not easy to maintain.
- Requests for information are dramatically increasing.
- A student identification system is not in place to allow easy tracking of students.
- Existing Department accounting system does not provide timely financial information needed to effectively manage program expenditures.

LEADERSHIP, TECHNICAL SUPPORT AND TRAINING

Ongoing, comprehensive, technological training does not exist today.

- School personnel are not provided with adequate training for ODE-related collection and reporting requirements.
- Technological training for ODE staff is inadequate.
- The variety of hardware/software makes training difficult.
- Training centers with adequate hardware, software and personnel are not in place.
- Because of distances, training at the Department is time consuming and expensive for LEAs.
- There is no Department-wide coordination of training activities or technical support.

FUNDING

Current funding is not adequate to provide access to the technology needed to compete in today's marketplace for students, staff and administration.

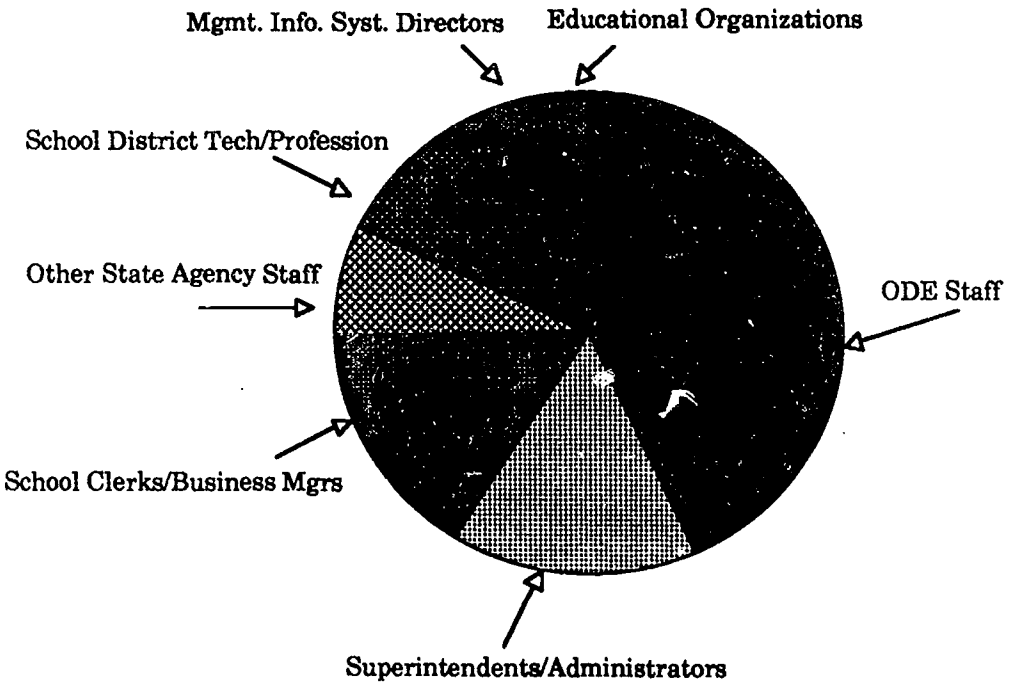
- Instruction and administrative technology units have been competing for available funds instead of leveraging their common use.
- Funding for technology must compete with other programs.
- Limited budgets for technology.
- Technology is just beginning to be recognized for its value in the educational environment but has yet to receive the same level of recognition in allocated funds.

FINDINGS

What we learned from interviews

The following pages summarize information gleaned from the six interview questions. The first five questions relate to what is currently needed to achieve the study objectives. The last question relates to how technology can be used to assist in achieving the State's educational goals for the 21st Century.

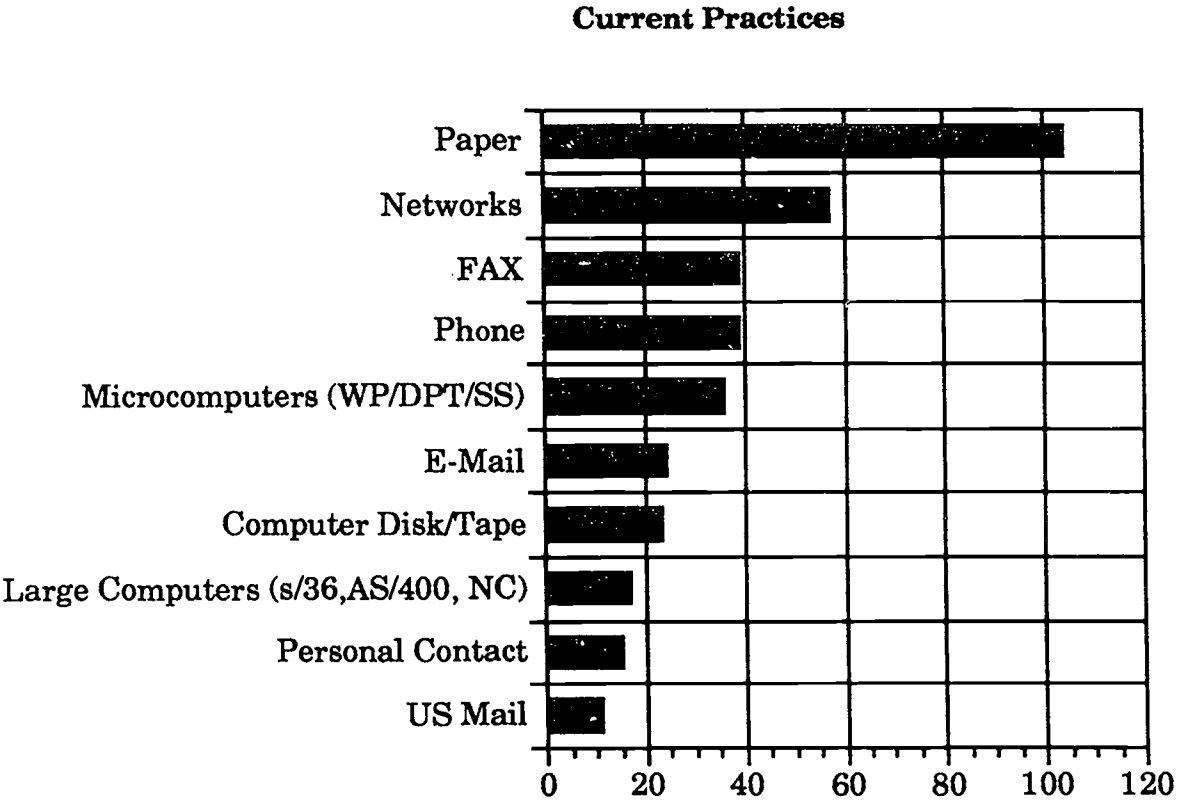
Interview Makeup



CURRENT PRACTICES

"Paper" and "local networks" were reported as current primary means of receiving, collecting, processing and sending information. In a number of cases the use of paper was reported because it is the required format for Department or other agency reports. Respondents made it clear that they would have preferred something other than paper submissions, such as fax, phone, or electronic submissions.

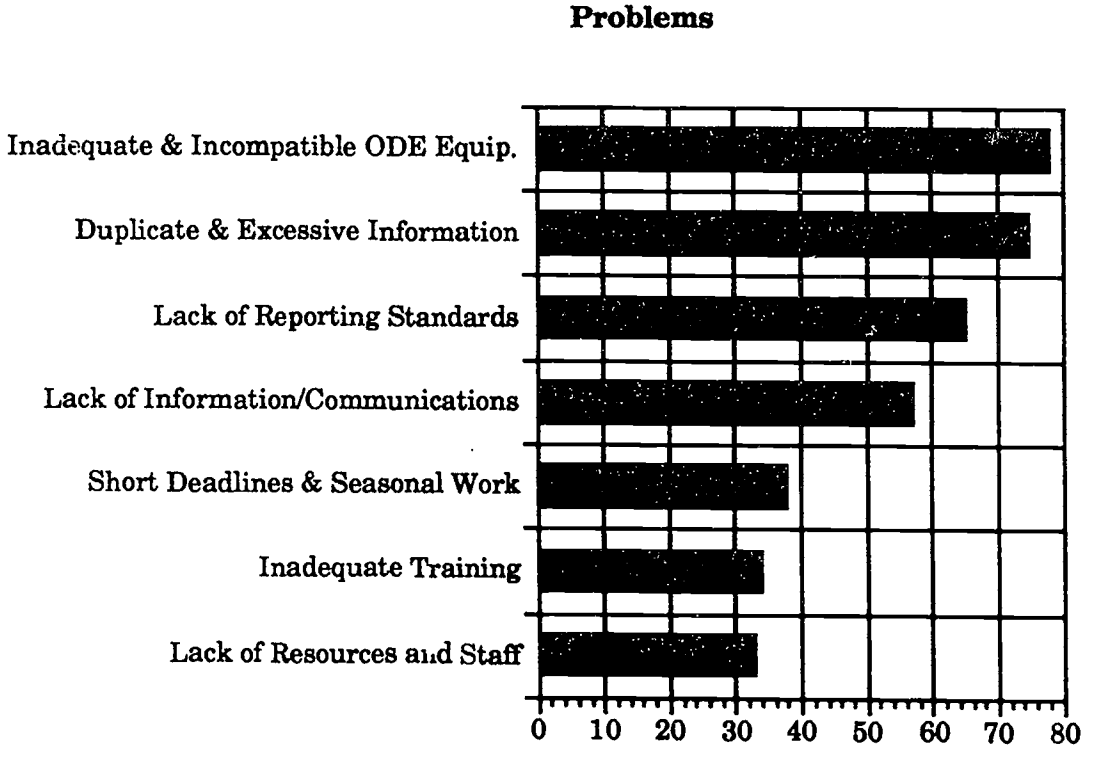
WHAT IS THE MOST EFFECTIVE METHOD FOR YOU TO RECEIVE, COLLECT, PROCESS AND REPORT INFORMATION?



PROBLEMS

The primary problem identified by respondents related to inadequate and incompatible ODE equipment as well as duplicate and excessive information requests. Of particular concern was the Department's insistence on paper submissions of information that districts have available electronically. Limitations that inhibit efficient reporting include the lack of standards, lack of communications networks, seasonal work loads, inadequate training and the lack of staff. While not enumerated as often as other areas, respondents and committee members expressed concern about some school districts and students that appear to have very limited or no access to technology.

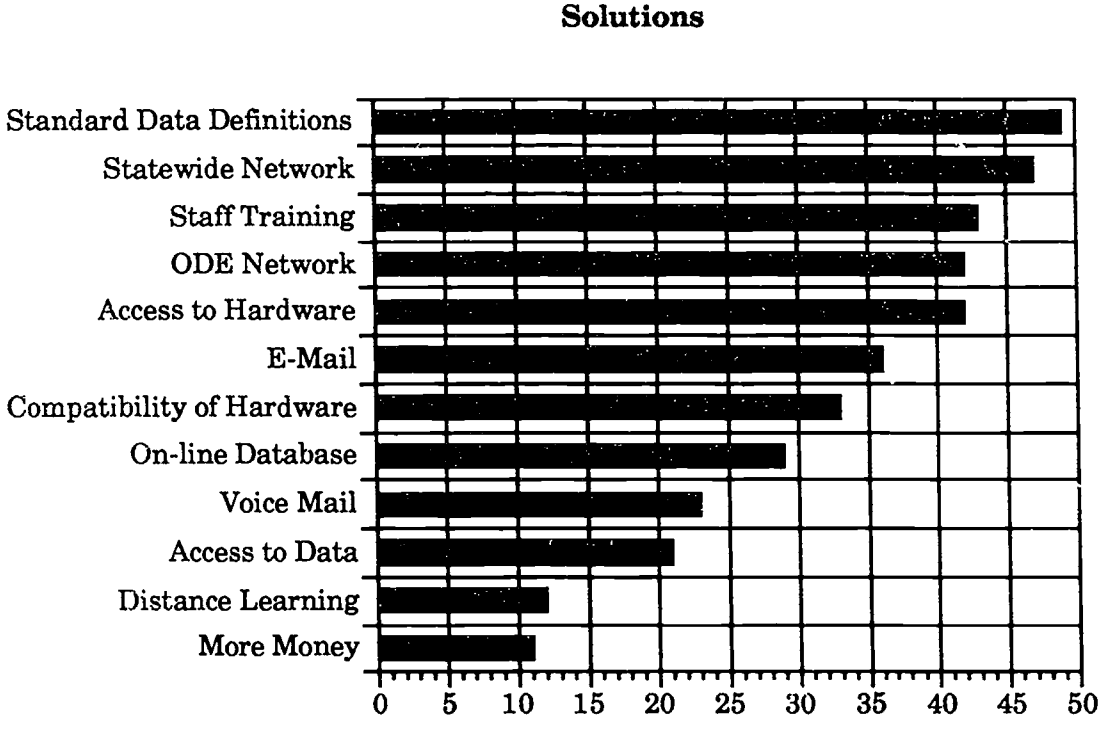
WHAT PROBLEMS DO YOU ENCOUNTER WHEN RECEIVING, COLLECTING, PROCESSING AND REPORTING INFORMATION?



SOLUTIONS

Solutions mentioned most often by respondents are directly related to the technology problems they ranked as high. For example, information service directors from around the state were quick to identify the development of standard definitions as a requirement for agencies to be able to electronically share information with the Department. Individual respondents expressed strong support for making the electronic transfer of information a priority and made specific recommendations for network solutions.

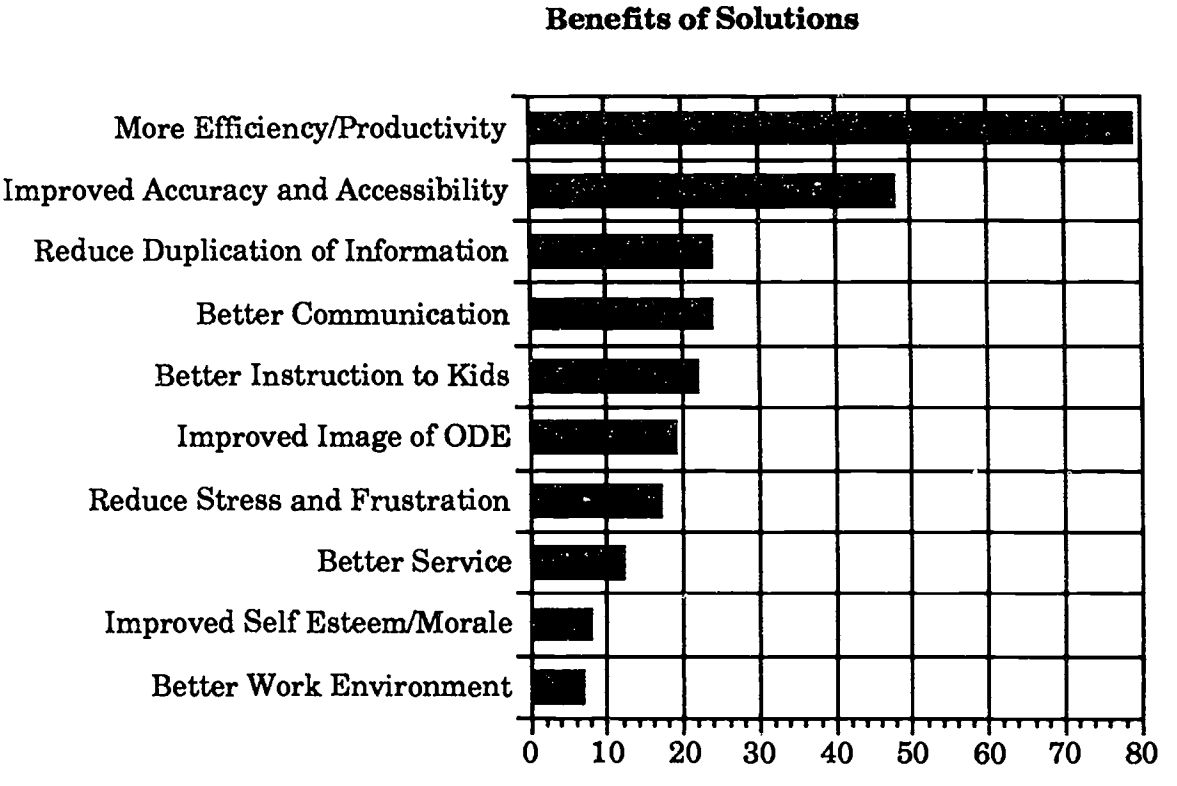
HOW WOULD YOU USE TECHNOLOGY TO SOLVE THESE PROBLEMS?



BENEFITS

More efficiency and productivity were seen as the strongest benefits of implementing solutions to problems areas. One of the agency respondents representing disabled individuals noted that access to technology "can make the difference between living in a group home or having a career." While the responses enumerated a number of work environment solutions such as improved accuracy and communications, a number of people noted that the real goal of the schools and the Department is better instruction for Oregon's students.

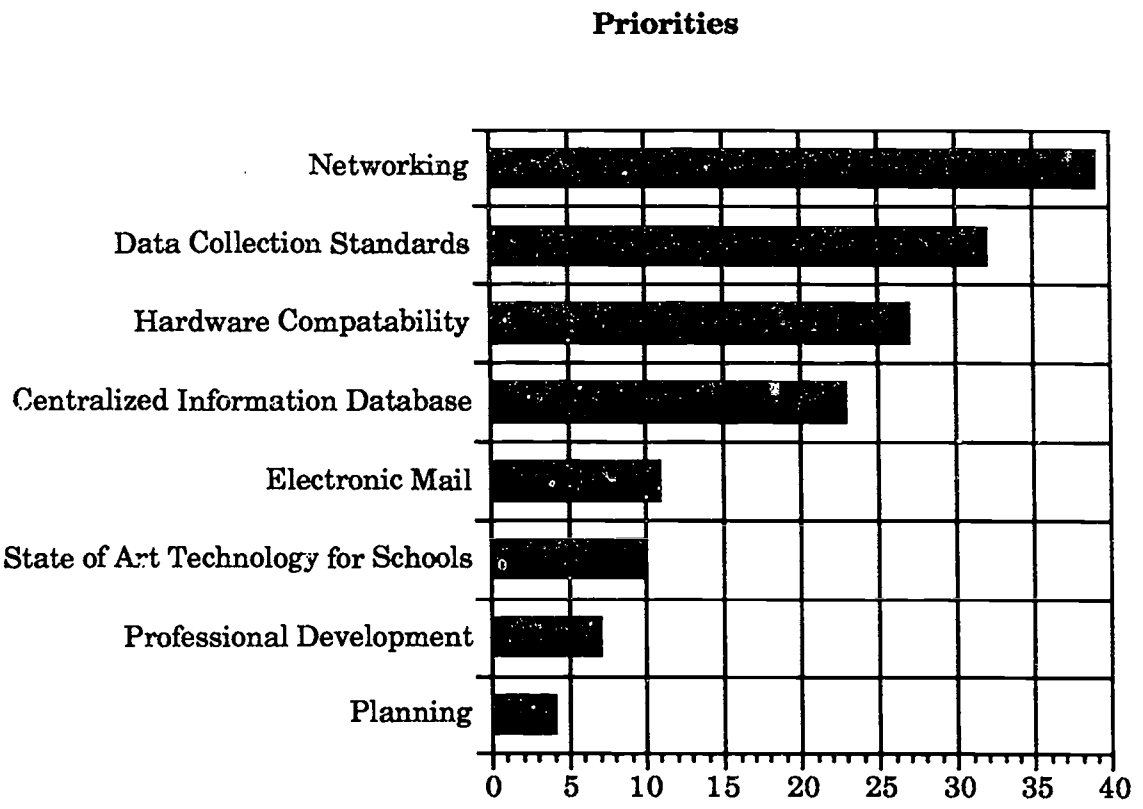
WHAT WOULD BE THE BENEFITS OF IMPLEMENTING YOUR SUGGESTIONS?



PRIORITIES

Networking, data collection standards, hardware compatibility and establishing a centralized information database were listed as the first four priorities. Implementing these priorities makes possible the other services, such as electronic mail and information access for districts. Professional development and planning are priorities throughout the development and implementation of any technology plan.

OF ALL THE SUGGESTIONS MENTIONED, WHICH WOULD YOU CONSIDER THE NUMBER ONE PRIORITY?



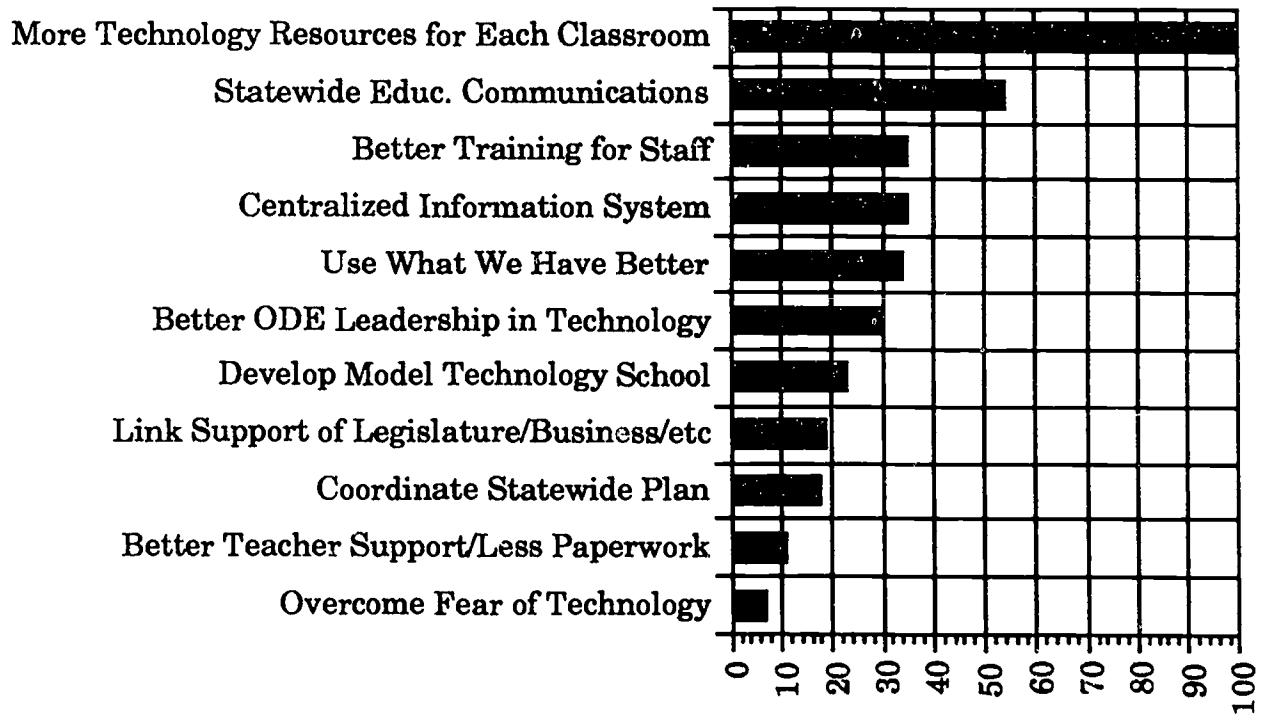
WHAT WILL IT TAKE TO BE THE BEST BY 2010

Oregon House Bill 3565 is a critical force in education and states that Oregon will have the best educated citizens in the nation by the year 2000 and a work force equal to any in the world by the year 2010. This legislation will restructure our schools to prepare Oregonians to enter the 21st Century possessing skills required to compete in a global economy.

Technology can be a significant tool in reaching the goals set forth by this reform legislation. Enhanced communications and information retrieval systems will support and supply the knowledge and skills required to become leaders in a world wide economy. An increase in technology resources for schools and classrooms is a recognized need in Oregon's schools, as illustrated in the following chart:

IF OREGON'S EDUCATION SYSTEM IS TO BE THE BEST IN THE WORLD BY 2010, WHAT TECHNOLOGY WILL BE REQUIRED TO ACCOMPLISH THIS GOAL?

Oregon to be Best by 2010



RECOMMENDATIONS

The committee developed the following recommendations based on project objectives, input from interviews and surveys, and analysis of the Department's present information processing system. Recommendations are directly related to major categories the committee addressed in this report: data standards; compatibility; hardware & software; electronic communication; information access; leadership, technical support and training; and funding.

DATA STANDARDS

- **The Oregon Department of Education must establish data collection and reporting standards which will provide:**

  — Common data definitions for all information requests.

  — Coordinated reporting deadlines.

  — Clear purposes for information requests.

  — The elimination of duplicate information requests and reporting.

  — Access to data dictionary of all collected and maintained data.

  Assumption: All data can be accessed both internally and externally.

COMPATIBILITY

- **The Oregon Department of Education must establish standards for acquisition, distribution, and maintenance of compatible technology.**

  This includes:

  — Standards for hardware, software and networks.

  — Hardware—modems, operating systems, microcomputers.

  — Software— word processing, data base, E-mail, communications, spreadsheets.

  — Networks—software, topology, cabling.

  Assumption: All hardware and software are compatible to provide efficient use and communication.

HARDWARE AND SOFTWARE

- **Department of Education must provide equitable distribution of technology and establish a plan for replacement and upgrade of that technology.**

  This requires:

  — Upgrading existing equipment.

  — Purchasing necessary equipment.

  — Providing all staff with access to all Department information and services.

  Assumption: All staff have the required tools necessary to perform their job in the most efficient manner.

ELECTRONIC COMMUNICATION

- **Establish a total statewide electronic communications network which will:**

  — Provide the capability for electronic data collection and reporting including applications, state and federal reports, district and student information.

  — Support multiple hardware and software platforms for activities such as E-mail, data bases, bulletin boards, fax, voice mail, distance learning.

  — Provide access to comprehensive electronic library of school-related data.

  — Maximize the use of existing regional networks.

  Assumption: Department data collection/distribution systems and data bases are accessible to all Department and LEA staff through a statewide communication system.

INFORMATION ACCESS

- **The Department must develop an information management system which integrates and maintains all collected data.**

This includes:

— Student systems--dropout, special education census, professional technical education data, etc.

— School information systems—fiscal, certificated personnel files, enrollment, etc.

— Access to on-line accounting system.

— Multi-agency systems—child services, employment, etc.

— Business applications—payroll, PERS, financial, etc.

Assumption: Data are requested only once and in the most efficient manner, and accessible by Department and LEA staff.

LEADERSHIP, TECHNICAL SUPPORT, AND TRAINING

- **The Department must provide leadership by developing and implementing a long-range technology plan to support hardware, software, communications, and appropriate staff training.**

- **The Department must provide appropriate levels of staffing to support this technology plan.**

— All staff will have the opportunity to review hardware and software standards before adoption.

— Technology support staff must maintain a knowledge of state-of-the-art technologies.

— All staff have the required resources, and are adequately trained.

— Ongoing review will occur for each component of the implementation plan.

Assumptions: The Department will be a leader in the planning of technologies for ODE, ESDs and School Districts.

FUNDING

- **Through a combination of redirecting existing resources, accessing grants, and developing business partnerships the Department must provide necessary funding to implement these recommendations.**

Funding avenues include:

— Review "Federal Register" for possible grants.

— Create list of possible business partnerships and explore options.

— Meet with educational organizations and form a cooperative similar to ORE-NET with the objective to develop a plan to prorate costs associated with needs of each group.

— Review each federal program source and determine availability of funds.

— Coordinate administrative and instructional technology budgets so they are no longer in competition with each other.

— Enter into cooperative agreements with LEAs to maximize the use of existing limited resources of ODE & LEAs.

— Review with General Services, State Library, ED-NET and other state agencies the sharing of existing telecommunication capabilities to minimize cost.

Assumption: Oregon's educational priorities can be accomplished through collaborate efforts and strong alliances with education, government, business and industry.

IMPLEMENTATION PLAN

The success of this effort is dependent upon the appointment of a project manager authorized to coordinate the implementation plan.

DATA STANDARDS AND COMPATIBILITY

The Department of Education will take a leadership role in the development, coordination, and maintenance of an effective data collection and information system. Noted by study participants as one of the major problem areas, standardization of equipment and data elements will be addressed in Phase 1. Other actions:

- Reinstate Data Collection and Information Systems (DCIS) Committee, as described in Administrative Bulletin 5.1, to help Department staff make a smooth transition toward standardization. Committee membership will include ODE and LEA staff.

- Appoint a Forms Control Officer who will have responsibility for the forms and data collection functions and will assist the project manager in developing and implementing the recommendations of this plan.

- Establish guidelines that result in the implementation of compatible technology through the acquisition, distribution and maintenance of hardware, software, networks, and use of data standards. This will require:

  — Determining the level of existing compatibility with newly established standards.

  — Developing and publishing acquisition guidelines/procedures.

  — Developing a plan for replacement and or update of noncompatible hardware, software and networks.

- Coordinate, consolidate, and eliminate duplicate data reporting requests:

  — Inventory current data collection instruments by timelines and purpose:
  Compile and define data elements of mandated data.
  Compile and define data elements of non-mandated data.

  — Define standard for each element and enter definition into a data dictionary.

— Build a common data base as standards and definitions are established.

— Develop a coordinated data reporting schedule for LEAs.

HARDWARE AND SOFTWARE

Develop a plan for replacing and upgrading technology to ensure information access and equitable acquisition and distribution. Purchase and use of all hardware and software will be reviewed by the DCIS Committee for need and compatibility.

Through purchase and upgrade, provide all ODE staff with appropriate hardware and standard software to adequately meet the needs of the position requirements.

- Hardware

  — Adopt the following as a minimum hardware standard:

  - Network compatibility
  - 80386 or 68030 Architecture
  - 80 Mb hard drive
  - 4 Mb RAM
  - Meets compatibility requirements
  - Laser printer availability and accessibility to all Department staff

  — Purchase communications platform for ODE network.

- Software

  — Provide each workstation with basic, user-friendly, compatible software from an approved list to carry out communications, word processing, networking, electronic mail, and utilities for conversion and transfer of data.

  — Special purchases will be made to efficiently meet work requirements:

  - Spreadsheets
  - Desktop Publishing
  - Data Bases
  - Graphics
  - Statistical Packages
  - Development Tools

ELECTRONIC COMMUNICATION

To enhance productivity of both ODE and LEA personnel, establish a statewide electronic communications network. This network must support electronic data collection, including applications, state and federal reports, and student information. The network must support multiple hardware and software activities such as E-Mail, data bases, bulletin boards and fax. Voice mail and distance learning also need addressed as networks are considered. Once implemented, the communications network must provide a comprehensive library of school-related data.

- Compile a list of current and planned purchases of LEA technology.

- Utilize existing resources, provide access for all Oregon LEAs and ESDs.

  — Connection to existing networks
  — Connection to districts not currently networked

- Take a leadership role in developing technology to facilitate inservice training and instructional classes.

  — Distance learning
  — HB 3565 (Educational Act for the 21st Century) goals

- Select and install a network processor.

- Develop and implement ODE internal network plan which uses compatible E-mail, bulletin boards and fax.

- Review feasibility of establishing regional data centers which would be networked to ODE.

  Install voice mail system to enhance communication between ODE and districts.

  Review distance learning systems and integrate data and instructional networks where feasible.

INFORMATION ACCESS

Requirements must be defined to implement a system to allow access to information. The following steps include a detailed review of existing and known new requirements from which decisions can be made on the most efficient approach to accomplish this recommendation.

- Determine the compatibility of existing data systems by using the results of the data inventory and requirements process.
- Complete analysis of what information is needed, the source and what conversion or new development is necessary.
- Where possible, eliminate duplication of information collected and stored in each of the existing systems.
- Develop and publish a report on all information currently collected, determining what is and is not mandatory.
- Complete the analysis of new information system requirements in HB3565, Carl Perkins, Workforce Quality Council, and Workforce 2000 for common system requirements.
- Complete a feasibility study of developing a standard for a statewide student identification system.
- Determine feasibility of adopting an existing statewide student/school/fiscal system from an Oregon LEA, another state department of education or vendor.

LEADERSHIP, TECHNICAL SUPPORT AND TRAINING

Leadership, training and technical support are required at each step of implementation of this plan. The following action is necessary to accomplish the recommendations to meet the needs of the Department and educational community.

- The Department must notify all LEAs of any workload implications resulting from the implementation on this plan.
- LEAs must be involved in the decision-making process for the detail implementation of any recommendations adopted in this plan having direct impact on the LEA.
- The Department must take an active role in coordinating the use of educational technology throughout the state to maximize the use and minimize the cost.
- The Department must take advantage of all LEA technology expertise in developing the details for each recommendation.
- The Department should conduct annual technology and data collection conference/workshops to maintain the best system available to ensure accurate and timely reporting.
- The Department should develop and adopt common curriculum goals for technology to ensure consistency of application and use for students.
- Establish and staff a Technology and Information Center having responsibility for:
  - Coordination of all technology related training.
  - Maintenance of data dictionary.
  - LAN administration.
  - Support of data inquiries.
  - Hardware and software review and recommendation to DCIS.
  - Hardware, software, and communications installation and support.
  - Maintain inventory of all technology and data related items.
  - Provide application consultation to users.
  - Develop and maintain standards.
- Training assessments will be completed and all staff will be provided with the opportunity to obtain training necessary to achieve the job responsibilities.
- Appointment of Divisional Technology Coordinators who will functions as technology coordinators and serve on the DCIS.

FUNDING

The funding identified in this report is estimated based on the experience of the task force members, discussion with other state agencies and knowledge of costs in today's market. These estimates have been developed with the knowledge that Oregon's competitive procurement rules will be followed and that the prices could change during that process.

Implementation of this plan can be accomplished through a combination of redirected resources, grants, collaborative efforts, and future budget allocations.

Costs are projected over a four-year time frame covering each of the recommendations. While the funding needs are listed by implementation year, the actual payments for the plan may be evened out over a different timeline, taking advantage of long-term financing. The costs are listed in two ways: (1) by recommendation; and (2) summarized by year.

Four Year Totals

Data Standards and Compatibility

This recommendation calls for standard data definitions, reporting deadlines, elimination of duplicate information, coordination of all data collection within the Department, review and approval of forms design and use, establishment of a data dictionary—all of which require staff time. This activity can be accomplished through redirection of existing staff or approval of new staff.

The compatibility recommendation is covered under communication, hardware, and software.

1 FTE @ $60,000/year (includes OPE)	Total	**$240,000**

Hardware/Software/ Information Access

This recommendation calls for technology and access for all appropriate Department personnel and for a statewide database system for all school reporting.

Central processor	$ 500,000
Central processor software	150,000
Terminals	330,000
Maintenance after warranty	120,000
Software for terminals	95,000
Laser printers (10 @ $2,000)	20,000
Application development or acquisition	250,000
Total	**$1,455,000**

Electronic Communication	This recommendation calls for the Department to be an electronic mail center and the central database for all school districts to access electronically. This plan calls for connectivity to and use of all existing school district networks and reviewing the feasibility of establishing regional sites to accommodate districts not currently in a networked environment.	
	Communication lines	$ 82,481
	Hardware for regional centers (10 @ $1,200)	12,000
	Equal access for school districts that do not have data communications with regional centers (50 @ $3,000)	150,000
	Network administrator $60,000/year = $240,000	240,000
	Total	**$484,481**
Leadership, Technical Support and Training	This recommendation calls for the establishment of a Technology and Information Center to coordinate all training	
	1 FTE @ $60,000/year	$240,000
	Training room equipment, software, ergonomics:	50,000
	Computers	
	Software	
	Furniture	
	Trainers station/server	
	Projection panel	
	Laser printer	
	Total	**$290,000**
	GRAND TOTAL for four years	**$2,469,481**

	Year 1	Year 2	Year 3	Year 4	Total
Compatibility& Standards	$ 60,000	$ 60,000	$ 60,000	$ 60,000	**$ 240,000**
HW/SW/Information Access	847,000	237,000	271,000	100,000	**1,455,000**
Communication	349,973	94,836	19,836	19,836	**484,481**
Training	110,000	60,000	60,000	60,000	**290,000**
TOTAL	**$1,366,973**	**$ 451,836**	**$ 410,836**	**$ 239,836**	**$2,469,481**

Full funding of the proposed $2,469,481 can be accomplished through a combination of redirecting existing state and federal resources; grants and business or agency partnerships; and new funds through the 1993-95 budget process.

All divisional budgets should be reviewed to determine if any nonexpended funds allocated for technology can be redirected to this project. If purchases are a part of approved federally funded plans, these purchases should be required to meet this plan's specifications for compatibility.

Potential funding sources to meet the requirements of this plan exist in each of the divisional programs. Each that has federal reporting requirements will be assessed based on their share of the development cost.

Other potential sources of funds are:

- 21st Century Schools
- Salaries for the staff members in those divisions currently responsible for data collection. Reallocation of these resources (dollars and staff) to support the development of the integrated data system should be a requirement.
- Chapter 2 funds
- Lottery funds
- National Center on Education Statistics Grant

A careful review of the Federal Register to locate other technology grant opportunities and continued monitoring of the federal High Performance Computing Consortium bill which includes funds for development of electronic networks.

Corporations with commitments to Work Force legislation or other school business partnerships should be approached with specific proposals for them to underwrite. For example, IBM underwrote the cost of this study as a part of its commitment to public education.

OREGON DEPARTMENT OF EDUCATION — TIMELINE

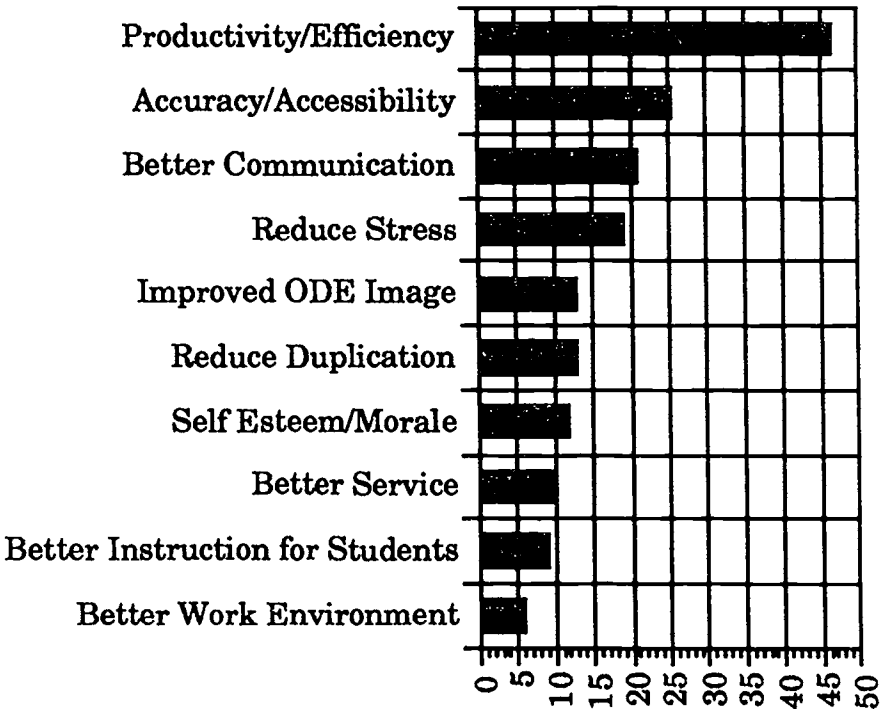
RECOMMENDATION	YEAR 1	YEAR 2	YEAR 3	YEAR 4
DATA STANDARDS	Reinstate review committee Appoint a Forms Control Officer Review current standards/schedule Adopt policy/procedure Develop guidelines & future needs Develop data standards & data base	 Update Update Update Update	 Update Update Update Update	 Update Update Update Update
COMPATIBILITY	Review compatibility of networks, equipment, software Develop acquisition guidelines	Update non-compatible hw/sw Update guidelines	Finish replacement Update guidelines	 Update guidelines
HARDWARE/ SOFTWARE	Define hardware/software model Assess needs of each office Develop, prioritize, and implement plan	Review/Update Continue acquisition	Review/Update Continue acquisition	Review/Update Continue acquisition
ELECTRONIC COMMUNICATION	Establish ODE/LEA communication Select network processor for electronic data collection Appoint network administrator Install network processor Establish connectivity among ODE networks Create compatible E-mail for ODE Define requirements and create bulletin boards Expand electronic communication capabilities including fax Expand use of distance learning	 Establish connectivity with LEAs Extend electronic mail to LEAs Extend electronic mail to LEAs Extend electronic communication; i.e., voicemail, teleconferencing	 Complete connectivity w/ LEA Complete connectivity w/ LEAs 100% participation	
INFORMATION ACCESS	Define ODE MIS	Begin implementation of MIS	Implement MIS	Implement MIS
LEADERSHIP, TECHNICAL SUPPORT AND TRAINING	Establish policies Establish schedules Establish training center LEA conference workshop Appoint coordinator Assign staff/other resources Assess needs-begin training Provide helpline, consulting, maintenance	Ongoing Update Update Expand conference Ongoing Continue training of trainers Continue	Ongoing Update Update Ongoing Ongoing Ongoing Continue	Ongoing Update Update Ongoing Ongoing Ongoing Continue
FUNDING	Review existing levels of expenditures Develop funding plan including: —reallocation —business partnerships —grants (federal & foundation) —legislative support —lottery —cooperatives (LEA, state agencies, organizations)	Expand funding	Expand funding	Expand funding

ANALYSIS AND CONCLUSIONS

Benefits to be gained from technology

During the interviews, ODE staff, ESD staff, and LEA staff identified a wide range of benefits which would be realized by the use of technology. The participants in most interview sessions were asked to estimate the amount of time that could be redirected if the technology called for in this proposal were made available to them. These estimates were further validated by a number of supplemental interviews with selected Department of Education and LEA staff. For 158 staff interviewed, the responses are graphically presented.

Benefits: ODE/Other Agencies



The top six benefits of ODE and other state agencies:

1. Improved Productivity/Efficiency

   - Save time with faster information access
   - Eliminate phone tag
   - Timely student records transfers
   - More cross-training of staff
   - Save money
   - More collaboration between school districts

2. Improved Accuracy/Accessibility

   - Faster response to information needs
   - Better, more timely decisions
   - More complete and accurate information
   - An estimated 80% of all information received now has errors or missing data
   - Better instructional placement of transfer students
   - More timely payments

3. Better Communications

   - Current information that is sent to districts more quickly and accurately will result in better instruction
   - E-mail assures that messages are received
   - Save time and resources
   - Improved ODE credibility, improved visibility

4. Reduced Stress

   - Greater staff efficiency and reduced frustration
   - Uniform availability of information
   - Better staff training
   - Improved staff morale
   - Staff job enrichment

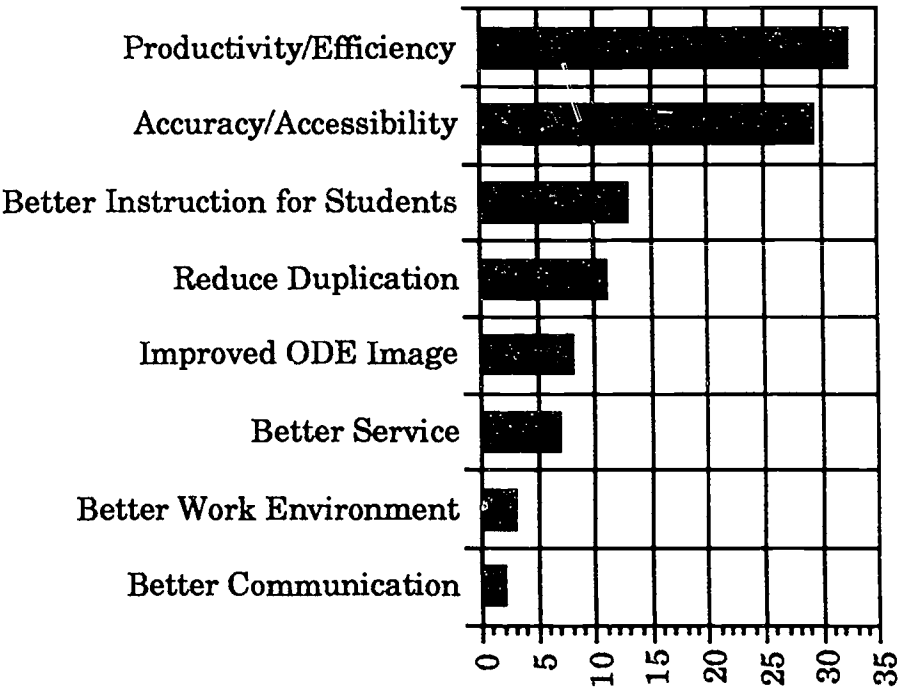
5. Reduced Duplication

   - Eliminate rekeying
   - Eliminate duplicate information requests from local districts and ESDs
   - Eliminate reformatting and retyping of correspondence
   - Save time and money
   - More time available to support instruction
   - Reduce storage requirements

6. Improved ODE Image

   - Assist local districts by providing more accurate and timely information
   - Professional staff more accessible to local districts
   - Faster and better service to local districts
   - Department staff more proactive
   - Better and more timely training for local district and ESD personnel
   - Less burden on local districts
   - Less resentment of ODE requests by local districts
   - Establish ODE as a leader in technology

Benefits: LEA/ESD



The top six benefits to local districts and ESDs:

1. Improved Productivity/Efficiency

   - Ability to get information makes each job easier
   - Less time needed to make improved decisions
   - Accuracy in information allows for quicker responses
   - Less time spent collecting information allows more time for problem-solving

2. Improved Accuracy/Accessibility

   - Better information in a more timely fashion
   - Electronic transfer of student records gives immediate access to data
   - Redundancy of information wastes staff time
   - Current, accurate, accessible information

3. Better Instruction

   - Staff time is better spent on educating students
   - The primary benefit will occur in the classroom
   - Improved quality of information equals better decisions and other results

4. Reduced Duplications

   - Less duplication and frustration
   - Improved communication
   - Improved clarity

5. Improved ODE Image

   - ODE moves from information collector to service provider
   - Providing more accurate and timely information to districts
   - ODE staff more accessible to local districts
   - Better and more timely training available to local districts
   - Less duplication of requests from ODE would assist local districts

6. Improved Service

   - More visibility for what we are doing
   - Electronic transfer of student records for immediate access to data
   - Faster and better communication for all districts
   - Less travel to/from remote Oregon school districts

REDIRECTED TIME

It has been projected that 132,795 hours statewide could be redirected annually, as illustrated on page 39. Dollar extensions were based on average hourly rates, hours worked per day and days worked per year. The following are job classifications most affected and average time estimates given by those interviewed.

Professional/Technical Education

Staff said they could redirect one hour per day given access to the following:

(a) networked computer on every desk
(b) word processing software
(c) spreadsheet software

Redirected time would be used by staff to serve school districts more effectively by providing information that is more up to date and accurate than is currently possible.

Special Education

Staff said they could redirect 2.5 hours per day given access to the following:

(a) ODE and statewide network
(b) electronic mail
(c) on-line forms
(d) customized information
(e) electronic bulletin boards
(f) specialized databases

Availability of this technology would allow support staff to handle most routine requests allowing specialists to redirect time to technical assistance, workshop offerings, research and development of policies and procedures.

Support Staff

Staff said they could redirect one hour per day given access to:

(a) ODE network
(b) computer on each desk
(c) word processing software
(d) electronic mail
(e) desktop publishing

This redirected time would allow for redeployment of some personnel, and for currently neglected jobs to get done. Specialists would have more time to work on new education initiatives.

School Improvement	Staff said they could redirect 1.5 hours per day if they had the following: (a) statewide network (b) electronic mail (c) electronic transfer (d) desktop publishing (e) specialized databases The redirected time could be used to be better organized (reducing piles of paper, cut filing space, up-to-date schedules).
Personnel	Staff said they could redirect one hour per day given access to the following: (a) ODE network (b) electronic mail (c) spreadsheet software The redirected time would be used to be better prepared for job applicant interviews and to prepare better payroll information for ODE and Deaf/Blind schools.
Fiscal	Staff said they could redirect approximately .75 of an hour per day if the following were available: (a) ODE and statewide networks (b) electronic mail (c) access to state accounting system (d) on-line forms Redirected time and improved communications would lead to: (a) enhanced decision-making regarding spending (b) more time to keep track of actual budget (c) staying current with grant awards (d) better handle on current financial status of agency—fewer corrections afterward (e) improved image (f) more time for budget analysis and projections
LEA Business Managers/Deputy Clerks	Staff said they could redirect 1.5 hours per day if they had access to a statewide network with ODE, other ESDs and LEAs, including: (a) electronic mail (b) electronic transfer of information (c) on-line forms

If this time could be redirected, they indicated that more services could be provided to ESDs, they could reduce the amount of work taken home, provide more time for future planning, and spend more time doing cash-flow analysis.

Oregon Department of Education
Redirected Time
Benefits Analysis

	Professional Technical	Special Education	Support Staff	Curriculum	Personnel	Fiscal Services	Business Managers
Network-ODE		x	x		x	x	
Network-Statewide		x		x		x	x
Computer on Desk	x		x				
Word Processing	x		x				
Electronic Mail		x	x	x	x	x	x
Electronic Transfer				x			x
Desktop Publishing			x	x			
Spreadsheet	x				x		
State Accounting System Access						x	
On Line Forms		x				x	x
Customized Information		x					
Electronic Bulletin Board		x					
Specialized Data Bases		x		x			
Hours Per Day	1	2.5	1	1.5	1	0.75	1.5
Number of Days	260	260	260	260	260	260	260
Number of Staff	21	66	5	11	1	3	200
Total Annual Hours Saved	5,460	42,900	1,300	4,290	260	585	78,000
Average Hourly Rate	$13.75	$24.50	$15.97	$13.75	$20.39	$18.29	$25.00
Annual Value of Redirected Time	$75,075	$1,051,050	$20,761	$58,988	$5,301	$10,700	$1,950,000
Total Annual Hours	132,795						
Total Annual Value	$3,171,875						

APPENDIX A

TECHNOLOGY STUDY PARTICIPANTS

ODE STAFF

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Professional Tech Ed

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Computer Consortium

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Management Serv

Ralph Burnley
Director
Business Serv

Bob Burns
Deputy Superintendent
Education Progs

Ardis Christensen
Director
Compensatory Ed

Pat Chryssanthis
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Wendy Crane
Dept Receptionist

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School Reform

Bill Cruscial
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OSD

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Exec Supp Spec to
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Lin Fleming
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Dot Guy
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Reconcil & Accts Rec

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Talented & Gifted

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Assess/Policy Analysis

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Forest Prod/Envir/Graph

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Specialist
Oper & Commodity Distr

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Specialist
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Gilchrist High Sch

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Vernonia SD 47J

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Lane ESD

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Chemeketa

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OTIS
Lane ESD

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McMinnville SD

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Umatilla ESD

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Washington ESD

Dean Thompson
Curriculum Dir
Umatilla ESD

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Jacksonville Elem

Darron Vaughn
State Treasury

Janice Welle
Superintendent
Harrisburg UHSD 5J

John Westine
Research Coord
Ed Policy & Planning

Jim Williams
Consultant
ED-NET

TRAINING MATRIX

	Oregon Department of Education	All Management	All Support staff	Legal services	Business services	Office Automation	School Finance	School business services	Child nutrition	Federal programs	Special education	Technology coordinators	Specialists	Training center staff	**School District**	District Administration	Elementary administration	Secondary administration	Data processing	Business services management	Business services support	Special education	Curriculum directors	Food services
HARDWARE NETWORK INSTALLED																								
Novell																								
Appleshare																								
LightSpeed																								
SOFTWARE INSTALLED																								
Word Processing																								
WordPerfect																								
MS Word																								
Wang +																								
Spreadsheet																								
Lotus																								
Excel																								
Database																								
FileMaker Pro																								
Fox Pro																								
D Base																								
Desktop Publishing																								
Pagemaker																								
Communications																								
Pro Com																								
EMail																								
Wang																								
Quickmail																								
Central Database																								
???																								
Other - some may be chosen for special small group training																								
Auto Cad																								
Cad Key																								
Mac Draft																								
Superpaint																								
SPSS																								
SAS																								
Linkway																								
Hypercard																								
LEA ACCESS TO NETWORK																								

APPENDIX C

INDIVIDUAL NEEDS ASSESSMENT

NAME:_____

JOB DESCRIPTION:_____

DIRECTIONS: Considering your position with the Oregon Department of Education, please mark the range of training that you need for each of the software programs.

TYPE OF SOFTWARE	RANGE FOR TRAINING Need Little				Need A Lot
WORD PROCESSING	1	2	3	4	5
WordPerfect	1	2	3	4	5
MS Word	1	2	3	4	5
Wang +	1	2	3	4	5
SPREAD SHEET	1	2	3	4	5
Lotus	1	2	3	4	5
Excel	1	2	3	4	5
DATA BASE	1	2	3	4	5
Fox Pro	1	2	3	4	5
DBase	1	2	3	4	5
DESK TOP PUBLISHING	1	2	3	4	5
Pagemaker	1	2	3	4	5
COMMUNICATIONS	1	2	3	4	5
Procom	1	2	3	4	5
E-MAIL	1	2	3	4	5
Wang	1	2	3	4	5
Q-Mail	1	2	3	4	5
NETWORK	1	2	3	4	5
Novell	1	2	3	4	5
Appleshare	1	2	3	4	5
Lightspeed	1	2	3	4	5
CENTRAL DATABASE	1	2	3	4	5
LEA ACCESS TO NETWORK	1	2	3	4	5
OTHER	1	2	3	4	5
Auto CAD	1	2	3	4	5
CAD Key	1	2	3	4	5
MacDraft	1	2	3	4	5
Superpaint	1	2	3	4	5
SPSS	1	2	3	4	5
SAS	1	2	3	4	5
LINKWAY	1	2	3	4	5
Hypercard	1	2	3	4	5

APPENDIX D

QUESTIONNAIRE SUMMARIES

Of the 230 people asked to respond to the questionnaire regarding the Information and Technology Requirements Study, 119 were returned. Since most of the questions were directed at Department staff to evaluate the need for technology, some of the questions have a high percentage of "no response."

I. Professional Development

Responses to questions regarding training indicate that most people would prefer to have a well-written training manual as opposed to tutorial software, video or formal classroom instruction. If training sessions are held, respondents clearly prefer the instruction to be somewhere away from their work location, preferably away from the office.

"Word processing" was indicated as the software category most available. It is interesting to note that word processing was also the area with the lowest need for training. Spreadsheet and electronic mail packages appear to be the next most frequent in availability with moderate perceived need for training. While all areas were indicated for some need for training, networking and desktop publishing were perceived as the areas where the need for professional development was the highest. Software and functions reported as needed but not currently available included networking, electronic mail, calendar software and image processing. All areas were seen as having some level of need, some use and needing some training.

Training Method	**Percent**
Formal Classroom Instruction	8.4
Training Manual/Tutorial	44.5
Training Diskettes/Workbook	21.8
Video Based Tutorial	14.3
Video Based in Classroom	1.7
Video Based by Myself	9.2

Training Timing	**Percent**
During Work Hours—All Day Session	21.8
During Work Hours—Half Day Session	56.3
On My Own Time	10.1
Other	5.9
No Response	5.9

Training Location	**Percent**
Away From the Office—Formal Classroom	40.3
Away From the Office—At Home	5.9
At My Desk	15.1
Another Area, Away From Work Station	31.9
No Response	6.7

	Currently Used			Needed	Need for Tutoring				
	NR	Y	N	Not Avail	1	2	3	4	NR
1. Word Processing	1.7	86.6	11.8	5.0	38.7	23.5	8.4	9.0	20.0
2. Desktop Publishing	11.0	34.5	54.6	17.6	11.8	15.1	26.0	21.8	25.0
3. Database Mgt./ Stat. Analysis	12.0	48.7	39.5	19.3	12.6	18.5	21.8	26.1	21.0
4. Spreadsheet	5.9	55.5	38.7	12.6	27.7	17.6	19.3	14.3	21.0
5. Graphics	14.0	38.7	47.1	20.2	10.9	14.3	26.1	21.0	28.0
6. Electronic Mail	11.0	61.3	37.8	26.1	18.5	18.5	13.4	21.0	29.0
7. Electronic Calendaring	13.0	17.6	68.9	23.5	16..0	9.2	16.0	21.0	38.0
8. Teleconferencing	18.0	27.7	54.6	16.0	11.8	15.1	18.5	9.2	45.0
9. Image Processing	19.0	22.7	58.0	24.4	10.9	11.8	16.0	17.6	44.0
10. Electronic Voice Processing	19.0	4.2	77.3	19.3	15.1	6.7	9.2	14.3	55.0
11. Multi-Media	19.0	15.1	66.4	17.6	9.2	9.2	9.2	21.0	51.0
12. Distance Learning	17.0	20.2	63.0	19.3	12.6	7.6	10.9	19.3	50.0
13. Robotics	22.0	4.2	73.9	6.7	22.7	3.4	3.4	6.7	64.0
14. Networking	14.0	42.0	43.7	27.7	6.7	12.6	18.5	31.1	31.0
15. Technical Support	23.0	51.3	26.1	12.6	9.2	12.6	10.9	20.2	47.0

Values are expressed as percent.
NR = No Response

II. Communications

The data seem to support the conclusion that a high number of communications occur between the Oregon Department of Education, schools and other agencies responding to this questionnaire.

As expected, telephone and mail represent the most frequent methods used daily, for communication reported by each respondent. It is interesting to note that electronic mail was reported by 33% of the people as used on a daily basis within each agency. Communications via electronic mail drops to only 8.4% on a daily basis with external agencies.

Frequency of Communication	Daily	Weekly	Occasionally	Rarely	NR
1. Dept. within Organization	84.9	3.4	1.7	6.7	3.4
2. Oregon Department of Education	52.1	13.4	26.1	5.0	3.4
3. Other State Agencies	20.2	22.7	38.7	15.1	3.4
4. Other Government Agencies	4.2	24.4	41.7	26.9	3.4
5. Education Service Districts	25.2	30.3	26.1	13.4	3.4
6. Community Colleges	6.7	8.4	47.1	32.8	3.4
7. Schools	55.5	16.0	9.2	14.3	3.4
8. Colleges & Universities	3.4	14.3	45.4	33.6	3.4
9. Federal Agencies	5.0	7.6	46.2	37.8	3.4
10. Public Data Networks	5.0	3.4	22.7	65.5	3.4
Frequency/Communicate Within					
1. Telephone	95.0	0.8	—	0.8	3.4
2. FAX	14.3	13.4	12.6	56.3	3.4
3. Electronic Mail	32.8	5.9	5.0	52.9	3.4
4. Internal Mail	72.3	12.6	2.5	9.2	3.4
5. External Mail	35.3	6.7	47.9	3.4	—
6. Teleconferencing	1.7	1.7	14.3	79.0	3.4
7. Distance Learning	0.8	0.8	3.4	91.6	3.4
8. Meetings	36.1	35.3	17.6	7.6	3.4
Frequency/Communicate Outside					
1. Telephone	91.6	3.4	0.8	0.8	3.4
2. FAX	26.9	34.5	37.7	7.6	3.4
3. Electronic Mail	8.4	10.1	10.1	68.1	3.4
4. Internal Mail	29.4	16.8	10.1	40.3	3.4
5. External Mail	56.3	20.2	7.6	12.6	3.4
6. Teleconferencing	1.7	2.5	29.4	63.0	3.4
7. Distance Learning	0.8	0.8	8.4	86.6	3.4
8. Meetings	11.8	37.0	34.5	13.4	3.4

Values are expressed as percent.
NR = No Response

III. Educational Programs

Because of the high number of "no responses" the data regarding educational programs is difficult to interpret. A little less than half the respondents were Department staff who did not respond about programs within the agency. Some possibilities that might be concluded from this portion of the data include:

A. Most respondents reported on awareness of data duplication, with vocational and nutrition programs most frequently noted.
B. Most people reported paper submissions as opposed to electronic.
C. Training was desired by some people in all areas, but no area seemed remarkable for this perceived need.

	Ease of Reporting					Duplicated?		
	1	2	3	4	NR	Yes	No	NR
1. Chapter 1	5.0	5.9	13.4	3.4	72.3	17.6	5.9	76.5
2. Talented & Gifted	1.7	8.4	7.6	1.7	79.8	11.8	5.0	83.2
3. Vocational Prog.	9.2	13.0	10.9	0.8	66.4	23.5	5.0	71.4
4. Special Ed.	10.0	12.0	10.1	3.4	64.7	5.9	26.1	68.1
5. Child Nutrition	3.4	4.2	9.2	2.5	80.7	14.0	4.2	84.0
6. Two plus Two	5.0	5.9	5.0	0	84.0	10.1	3.4	86.6
7. Chapter 1-M	4.2	2.5	5.0	2.5	85.7	9.2	3.4	87.4
8. Early Child & El.	1.7	0.8	5.0	2.5	89.9	3.4	3.4	93.3
9. Head Start	0	1.7	4.2	0	94.1	2.5	1.7	95.8
10. Distance Learn.	0.8	0	9.2	1.7	88.2	4.2	4.2	91.6
11. Home School	0	5.0	6.7	4.2	84.0	8.4	5.9	85.7
12. Private School	1.7	5.9	8.4	0.8	83.2	7.6	7.6	84.9

	Collected/Reported			Need for Training				
	Paper	Elect.	NR	1	2	3	4	NR
1. Chapter 1	26.9	3.4	69.7	4.2	10.1	7.6	5.0	73.1
2. Talented & Gifted	22.7	2.5	74.8	5.9	4.2	10.1	2.5	77.3
3. Vocational Prog.	32.8	0.8	66.4	5.9	10.1	10.9	7.6	69.5
4. Special Ed.	34.5	1.7	68.9	1.7	11.8	10.1	10.1	66.4
5. Child Nutrition	18.5	0.8	80.7	2.5	6.7	7.6	1.7	81.5
6. Two plus Two	16.0	0	84.0	0.8	6.7	4.2	5.0	83.2
7. Chapter 1-M	12.6	2.5	84.9	5.0	2.5	3.4	4.2	84.9
8. Early Child & El.	10.9	0	89.1	2.5	3.4	3.4	1.7	89.1
9. Head Start	6.7	0	93.3	1.7	2.5	1.7	1.7	92.4
10. Distance Learn.	10.1	1.7	88.2	0.8	5.0	3.4	2.5	88.2
11. Home School	17.6	0.8	81.5	4.2	6.7	6.7	0.8	81.5
12. Private School	16.8	0.8	82.4	5.9	5.0	2.5	3.4	88.2

Values are expressed as percent.
NR = No Response

IV. School Data

For school data, respondents appeared to report that demographics and student data was the easiest to report, had the most duplications but required less training than other areas. Paper submissions prevail.

	Ease of Reporting					Duplicated?		
	1	2	3	4	NR	Yes	No	NR
1. Demographics	8.4	13.0	28.0	12.0	44.0	34.5	13.4	52.0
2. Student Data	5.9	15.0	18.0	12.0	50.0	27.7	10.1	62.0
3. Assessment	5.9	17.0	7.6	3.4	66.0	16.8	8.4	75.0
4. Grad. Rates, Early Leavers	12.0	13.0	9.2	2.5	63.0	18.5	8.4	73.0
5. Exemplary Program	4.2	4.2	2.5	0.8	88.0	4.2	3.4	92.0
6. Facilities	3.4	7.6	5.0	2.5	82.0	9.2	3.4	87.0
7. Transportation	0	13.0	9.2	2.5	75.0	12.6	5.0	82.0

	Collected/Reported			Need for Training				
	Paper	Elect.	NR	1	2	3	4	NR
1. Demographics	47.1	6.7	46.0	17.0	13.0	17.0	5.9	47.0
2. Student Data	36.1	9.2	55.0	15.0	8.4	14.0	5.0	57.0
3. Assessment	24.4	7.6	68.0	6.7	5.0	15.0	6.7	66.0
4. Grad. Rates, Early Leavers	30.3	4.2	66.0	13.0	5.0	12.0	8.4	62.0
5. Exemplary Program	9.2	0.8	90.0	0.8	2.5	6.7	3.4	87.0
6. Facilities	16.0	0.8	83.0	3.4	1.7	8.4	2.5	84.0
7. Transportation	22.7	0	77.0	5.0	4.2	11.0	5.0	75.0

Values are expressed as percent.
NR = No Response

IV. Student Data

As before, paper submissions of data frequently duplicated is noted for student data. Ease of reporting and the need for training revealed no remarkable patterns.

	Ease of Reporting					Duplicated?		
	1	2	3	4	NR	Yes	No	NR
1. Disabilities	7.6	13.0	6.7	5.0	68.0	17.6	5.9	77.0
2. Family Income	7.6	10.0	3.4	2.5	77.0	10.1	6.7	83.0
3. Demographics	5.0	13.0	13.0	9.2	61.0	21.8	9.2	69.0
4. Attendance Data	7.6	9.2	18.0	7.6	58.0	24.4	11.8	64.0
5. Achievement	7.6	6.7	13.0	8.4	64.0	18.5	13.4	68.0

	Collected/Reported			Need for Training				
	Paper	Elect.	NR	1	2	3	4	NR
1. Disabilities	26.1	3.4	71.0	5.9	5.9	12.0	4.2	72.0
2. Family Income	21.8	1.7	77.0	4.2	1.7	10.0	5.0	79.0
3. Demographics	31.9	6.7	61.0	10.0	7.6	13.0	7.6	62.0
4. Attendance Data	28.6	11.8	60.0	14.0	2.4	10.0	5.9	61.0
5. Achievement	23.5	10.1	66.0	13.0	8.4	5.0	5.9	68.0

Values are expressed as percent.
NR = No Response

VI. Personnel

Personnel data is not rated as particularly difficult to prepare. It is duplicated on paper but with relatively low levels of perceived need for training.

	Ease of Reporting					Duplicated?		
	1	2	3	4	NR	Yes	No	NR
1. Demographics	2.5	12.0	18.0	9.2	59.0	21.0	14.3	65.0
2. Credentials	0.8	11.0	13.0	8.4	66.0	10.9	19.1	74.0
3. Salary	1.7	6.7	18.0	12.0	62.0	16.8	13.4	70.0
4. Employment	2.5	10.0	13.0	5.9	69.0	13.4	10.9	76.0

	Collected/Reported			Need for Training				
	Paper	Elect.	NR	1	2	3	4	NR
1. Demographics	9.2	30.3	61.0	14.0	11.0	10.0	9.0	60.0
2. Credentials	24.4	7.6	68.0	13.0	7.6	11.0	3.4	65.0
3. Salary	26.1	10.1	64.0	19.0	8.4	8.4	2.5	62.0
4. Employment	22.7	7.6	70.0	14.0	4.2	7.6	5.0	69.0

Values are expressed as percent.
NR = No Response

VII. Financial/Fiscal

Fiscal data for school district information appears to be perceived as easier to prepare and has less duplication. Paper submissions still prevail, however.

	Ease of Reporting					Duplicated?		
	1	2	3	4	NR	Yes	No	NR
1. District Budgets	4.2	9.2	14.0	6.7	66.0	14.3	12.6	73.0
2. Local Revenues	2.5	13.0	9.2	3.4	72.0	10.1	10.1	80.0
3. State Revenues	9.0	8.4	8.4	7.6	71.0	9.2	10.1	81.0
4. Federal Rev.-Direct	2.5	8.4	11.0	4.2	74.0	9.2	9.2	82.0
5. Federal Thru State	3.4	13.0	10.0	5.0	69.0	10.1	10.9	79.0
6. Program Expend.	2.5	9.2	14.0	13.0	61.0	12.6	18.5	69.0
7. Detail Expend.	2.5	8.4	13.0	13.0	64.0	14.3	16.0	70.0
8. Annual Reports	1.7	6.7	12.0	10.0	68.0	10.1	16.0	74.0
9. Contracts & Grants	2.5	13.0	13.0	5.0	66.0	17.6	10.1	72.0
10. Indirect Cost Plans	3.4	9.2	7.6	4.2	76.0	7.6	12.6	80.0
11. Food Service Cost	1.7	5.9	11.0	5.0	77.0	7.6	9.2	83.0
12. Transportation Costs	0	7.6	9.2	5.0	78.0	9.2	7.6	83.0
13. Avg. Per Pupil Costs	5.9	9.2	11.0	1.7	72.0	13.4	9.2	77.0

	Collected/Reported			Need for Training				
	Paper	Elect.	NR	1	2	3	4	NR
1. District Budgets	22.7	10.1	67.0	10.0	10.0	10.0	3.4	66.0
2. Local Revenues	8.5	84.0	73.0	6.7	5.0	9.2	6.7	72.0
3. State Revenues	21.0	5.6	78.0	5.9	9.0	9.2	7.6	72.0
4. Federal Rev.-Direct	17.6	5.0	77.0	5.9	6.7	9.2	3.4	75.0
5. Federal Thru State	24.4	4.2	71.0	5.0	8.4	10.0	4.2	73.0
6. Program Expend.	26.9	11.8	61.0	10.0	13.0	10.0	7.6	60.0
7. Detail Expend.	22.7	12.6	65.0	9.2	10.0	8.4	7.6	65.0
8. Annual Reports	18.5	10.9	7.1	5.9	8.4	8.4	6.7	71.0
9. Contracts & Grants	28.6	9.9	66.0	5.9	8.4	13.0	8.4	65.0
10. Indirect Cost Plans	21.8	4.2	74.0	5.9	5.9	8.4	6.7	73.0
11. Food Service Cost	17.6	4.2	78.0	5.9	5.9	5.9	3.4	79.0
12. Transportation Costs	17.6	4.2	78.0	5.0	7.6	7.6	1.7	78.0
13. Avg. Per Pupil Costs	22.7	4.2	73.0	5.0	5.9	7.6	10.0	71.0

	Ease of Reporting					Duplicated?		
	1	2	3	4	NR	Yes	No	NR
1. Projected Budgets	5.9	12.0	6.7	5.0	71.0	10.9	8.4	81.0
2. Salary Costs	8.4	5.0	6.7	5.0	75.0	5.9	9.2	85.0
3. Expend./Program	13.0	7.6	5.9	9.2	65.0	10.9	10.9	78.0
4. Detail Expenditures	13.0	5.0	9.2	6.7	66.0	10.9	10.1	79.0
5. Grants Awarded	4.2	10.0	10.0	5.0	71.0	10.9	9.2	80.0
6. Contracts Issued	10.0	5.9	9.2	4.2	71.0	11.8	8.4	80.0
7. Revenues	7.6	4.2	4.2	8.4	76.0	8.4	7.6	84.0
8. Accounts Receivable	3.4	5.9	5.9	6.7	78.0	6.7	6.7	87.0
9. Encumbrances	6.7	6.7	10.0	5.9	71.0	9.2	10.9	80.0
10. Purchase Orders	5.9	8.4	8.4	12.0	66.0	13.4	10.1	77.0

	Collected/Reported			Need for Training				
	Paper	Elect.	NR	1	2	3	4	NR
1. Projected Budgets	19.3	5.9	75.0	4.2	12.0	5.0	5.9	73.0
2. Salary Costs	16.0	4.2	80.0	9.0	10.0	4.2	2.5	78.0
3. Expend./Program	17.6	9.2	73.0	6.7	9.2	6.7	6.0	70.0
4. Detail Expenditures	16.0	10.9	73.0	6.7	7.6	5.9	6.0	72.0
5. Grants Awarded	18.5	6.7	75.0	8.4	5.9	5.9	5.0	75.0
6. Contracts Issued	21.8	3.4	75.0	6.7	5.0	7.6	5.0	76.0
7. Revenues	14.3	5.0	81.0	3.4	5.0	4.2	8.4	79.0
8. Accounts Receivable	14.3	4.2	82.0	7.6	5.0	1.7	4.2	82.0
9. Encumbrances	17.6	6.7	76.0	7.6	8.4	2.5	5.9	76.0
10. Purchase Orders	26.9	3.4	70.0	12.0	7.6	3.4	6.7	71.0

Values are expressed as percent.
NR = No Response